viti-notes

[pests and diseases]

Research to Practice

Managing mealybugs

Viti-note Summary:

- Natural enemies
- Biological control and cultural practices
- Action threshold
- Chemical control
- Dormancy spray
- Growing season spray
- Chemical resistance
- Chemical control options

Mealybugs are not normally considered to be a significant pest in wine grapes. Conventional thinking is that numbers will be kept in check by a diverse range of natural enemies unless something (such as the use of a broad spectrum insecticide) disrupts them. If mealybugs are infesting wine grapes and causing significant damage, it is worth considering what may have interrupted the natural balance.

Figure 1: Longtailed mealybug (image courtesy of DJ's Growers)

Decisions concerning mealybug control should be based on monitoring results and consideration should be given to natural predator population as well as current and forecast weather conditions. Mealybugs are susceptible to prolonged periods of hot weather. Only when monitoring indicates that an action threshold has been reached should chemical control options be considered.

Natural enemies

Mealybugs provide a food source or egg host for a number of natural enemies.

These include:

- The parasitic wasp species *Anagyrus fusciventris* (found in many warm irrigated districts), *Tetracnemoidea brevicornis* and *Ophelosia* spp.
- Larvae and adults of ladybird species such as *Cryptolaemus montrouzieri** and *Rhizobius ruficollis*.
- Green lacewings*, *Chrysopa* spp.
- The predatory fly *Diadiplosis koebeli*.
- Some spiders.

*Cryptolaemus ladybirds and green lacewings are available from insectaries in eastern Australia.

Figure 2: Green lacewing adult and eggs (images courtesy of Richard Llewellyn – Australasian Biological Control).

Other topics in this Viti-Notes series include:

- Mealybugs
- Monitoring mealybugs
- *Managing mealybugs*

Biological control and cultural practices

Providing habitat and food sources for parasites and predators of mealybugs may help maintain beneficial populations when mealybugs are scarce. Some cover crops and flowering plants provide pollen and nectar. It is also important to minimize the use of agrochemicals that impact on beneficial species.

The obvious presence of ants in a grapevine often indicates a sap sucking insect is at work. Ants will actively 'farm' and protect mealybugs from predators, in order to feed on the honeydew mealybugs secrete. To discourage ants keep canes from touching the ground. Chemical sprays applied to the base of vines and trellis supports can be used to block their access pathways into the vine framework but it is better to control the mealybug in the first instance.

Bunches and leaves that are touching the trunk or cordon are more likely to have mealybug. Try and minimise this occurring in the canopy.

Action threshold

If general infestation levels exceed a threshold of 10% of the 100 leaves or bunches sampled, it may be necessary to use a chemical control option. However the decision should be balanced against the potential for hot weather and natural predators to decrease the mealybug population. This should also be considered in relation to winery tolerance for mealybug contamination.

Chemical control

The table below provides a guide to all registered chemical options for mealybugs. Check the product label for appropriate use in your vineyard as registrations vary between states and between mealybug species.

While spraying is not generally required for control of mealybug on winegrapes, if significant economic loss has been experienced in previous seasons and present season conditions (temperatures ~ 25°C and high humidity) favour mealybug development, chemical control may be warranted.

The use of broad-spectrum insecticides is generally not recommended in IPM programs because of the impact on beneficial insects. Any chemical application should be carefully timed and targeted. If the predator population is reduced, the overall result may be that mealybug numbers are worse later in the season or in subsequent seasons.

If the decision is made to apply a chemical option:

- spray an appropriate registered chemical when nymphs are observed in large numbers; and
- target the juvenile life stages as adult mealybugs are protected by their waxy coating and are less vulnerable.

Dormancy spray

The purpose of a vine dormancy spray is to target overwintering adults. The population is well sheltered under bark and good coverage is essential. The spray unit should be set up to deliver a high water rate that saturates the trunk and cordon.

Growing season spray

Mealybugs are not equipped to move far within a vineyard, even with the help of ants. Identifying hotspots and then controlling infested areas is recommended. Where practical, target individual vines or patches of vines identified as sites of infestation using a high pressure hand spray gun. If it is necessary to use machinery to cover larger areas, ensure good spray penetration into sheltered parts of canopies.

Be aware that vineyard machinery is considered to be a possible avenue for mealybug spread.

Chemical resistance

Resistance to parathion by mealybugs has been reported overseas.

Chemical control options

The following tables list registered control options with restrictions on use for export wines. Check the product label for appropriate use in your vineyard as registrations vary between states and between mealybug species. It is recommended that you contact your winery or grape purchaser prior to any 1B insecticide application.

MEALYBUG

Active constituent	Activity Group	Some registered products	Restriction on use
paraffinic oil	n/a	Bioclear, Biopest, Trump Spray Oil	Dormant spray only.
buprofezin	16	Applaud, Clap, Country Buprofezin 440, Farmalinix Scale and Bug	Use no later than 80% capfall.
chlorpyrifos	1B	Country Chlorpyrifos 500, David Grays Chlorpyrifos 500	
clothianidin	4A	Samurai (soil application only)	
diazinon	1B	Barmac Diazinon, Country Diazinon, David Grays Diazinon 800, Diazol 800.	
maldison (malathion)	1B	Fyfanon 440 EW, Hy-Mal, Maldison 500	
methidathion	1B	Supracide 400, Suprathion 400 EC	
parathion-methyl	1B	Parashoot CS, Penncap-M	Use no later than 80% capfall. Do not allow re-entry into treated areas for 5 days.

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Further information

Learmonth, S. Understanding the biology and improved management of longtailed mealybug in WA. http://www.gwrdc.com.au/webdata/resources/project/RT04062.pdf

Training

For regional specific training in pest and disease control, the AWRI is running Research to Practice: Integrated Pest Management for changing viticultural environments.

Contact

Marcel Essling: rtp@awri.com.au for more information.

Agrochemical information

Agrochemicals registered for use in Australian Viticulture - updated annually.

Visit www.awri.com.au for the latest version.

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